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REMARKS

In response to the Office Action of December 1, 2004, Applicant has carefully considered the rejections of the Examiner in the above-identified application. In light of this consideration, Applicants believe that the claims as amended are allowable. Applicant respectfully requests reconsideration of the rejection of the claims now pending in the application.

In this first Office Action of December 1, 2004, claims 1 and 8 are rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. Claims 1-3 and 5-16 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,390,035, to Kasson et al. (hereinafter Kasson) in view of U.S. Patent No. 5,982,990, to Gondek (hereinafter Gondek). Claim 4 is rejected under 35 U.S.C. §103(a) as being unpatentable over Kasson in view of Gondek and U.S. Patent No. 5,553,199, to Spaulding, et al. (hereinafter Spaulding).

Claims 1 and 8 are rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. The office action first states that the claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or which it is most nearly connected, to make and/or use the invention. The Applicant must respectfully traverse.

Considerable effort has been expended on written support in the specification so as to provide support for the claims *for one skilled in the art.* For example, discussion of redundant color systems is provided in the paragraph starting at line 20 page 4 of the specification, and with page 5, table 1 includes a detailed list of the colorants for one possible embodiment The discussion of redundant color systems continues through to line 5 of page 6. Tessellation is discussed starting at line 11 of page 6:

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"A straightforward tessellation of the color space allows a
determination of the colorant amounts that are then needed to product
the color at point 240. For example, the ratio of the volume of the
tetrahedron defined by vertices 200, 210, 220 and point 240 to the
volume of the tetrahedron defined by 200, 210, 220 and 230 will give the
proper ratio amount of the color at vertex 230 to blend to create the color
at point 240. This is a technique understood by those skilled in the arts."
Citation is then made (page 6 lines 17-19) of U.S. Patent No. 4,275,413 to
Sakamoto et al., which was therein incorporated by reference in its entirety for
its teaching as a place for finding explanation in greater detail for this
technique. Discussion of the tessellation (the breaking up of an area or space
into regions) of color space into tetrahedrons is provided over-and-over-again
through-out the remainder of the specification including for example this
paragraph starting on page 6 line 21:

"In general, there can be many possible tetrahedra that enclose a
given point. The best tetrahedron for a point is the one that has most
nearly the same luminance for all of its vertices. This will minimize the
luminance contrast in the halftone pattern that produces the desired
color. However, it is desirable that the color space be divided into non-
overlapping tetrahedra so that there is never any ambiguity about what
tetrahedron should be used with any point in color space. So the
problem is then to tessellate color space into tetrahedra such that the
vertices of the individual tetrahedra have localized luminance values.
One could craft a tessellation by hand. However, algorithms for
tessellating space into tetrahedra are well known. For example, one can
start with a simple tessellation using only a few points that enclose the
volume of interest and add points one-by-one. As each point is added,
one determines the tetrahedron that contains it and subdivides it into
four tetrahedra as depicted in Figure 2."

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Or this paragraph starting on page 7 line 1:

"A discussion of tessellation is easier to understand and communicate when limited to examples of only two dimensions. Extrapolation of concepts developed in such a discussion from a two-dimensional space into a three-dimensional space is then an obvious and simple matter for those skilled in the art. Figure 3 depicts a two-dimensional slice of the three-dimensional color space depicted in Figure 1. Vertices for white 100, Cyan 110, and Magenta 120 from Figure 1 are depicted in Figure 3, although the orientation has been flipped and rotated as if looking at the rectangle of Figure 1 from the bottom. The vertex Magenta-Cyan 300 found as entry 28 in Table 1 above is opposite vertex white 100 and as such these vertices represent the available extremes of luminance. Color midpoints representing the additional available redundant color inks are shown in Figure 3 as well. These are: light magenta 310 (table 1 entry 6); light cyan 320 (table 1 entry 5); magenta-light cyan 330 (entry 23); cyan-light magenta 340 (entry 25); and midpoint light magenta-light cyan 350 (entry 15). Please note that for one preferred embodiment that the redundant inks such as provided here might not be at exact midpoints and also that when mixed together may not even blend in an entirely linear fashion."

Or this paragraph starting on page 7 line 19:

"Figure 4 depicts a direct and straightforward approach to tessellation of the color space shown in Figure 3. The color space has been canted slightly to emphasize the depiction of luminance variation by placing the highest points of luminance at the top and the lowest points at the bottom of the depiction. The top of the data at vertex 100 being the lightest and the bottom of the diagram at vertex 300 being the darkest end of available luminance variations. The tessellation employed here consists of breaking-up the color space by defining non-overlapping boundaries

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running from the center vertex 350 light-magenta light-cyan, and radiating
out to all other ink color vertices as shown in Figure 4. A non-overlapping
approach is preferred so as to eliminate ambiguity as to what region a
data point lies within.   However, this technique as discussed above,
undesirably creates tessellation regions which as illustrated here may
span more than half the available luminance range. One example is the
region defined by the three vertices white 100, light-cyan 320 and light-
magenta light-cyan 350. A region arranged as such means that color
halftone dots which land in this region will be made up of smaller spots of
the above three colorants. These three colorants are far enough apart in
luminance to create a grainy texture, and be unpleasant and distracting to
the eye. In this example color points 400 and 410 are in this same region
as a result of this tessellation approach even though they are quite far
apart in luminance."

Or this paragraph starting on page 8 line 5:

"Figure 5 shows an exemplary application of the teaching of the
present invention to the same color space data as depicted in Figure 4.
This tessellation can be constructed by sorting the color points in order of
their luminance and then starting with the darkest point, and adding the
points to the set considering each one-by-one. As each point is added, a
new triangle is formed from the current three lightest points in the set. If
adding the triangle results in a concave shape, then additional triangles
must be added to fill the cavity and maintain a convex construction. For a
three-dimensional color space this method is generalized to the form
tetrahedral volumes from the four lightest points in the set with the
addition of each new point. With this exemplary non-overlapping
tessellation scheme color points 400 and 410 as shown in Figure 5 are
now not only in separate regions but those regions have two intervening
tessellated regions between them. Color point 400 is in the region

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delineated by colorants cyan 110, magenta 120, and light-magenta light-cyan 350. Color point 410 is in the region delineated by colorants white 100, light-magenta 310, and light-cyan 320. The colorants that are now utilized to create the color dots to represent these color points are much closer in luminance and will therefore combine and blend in a manner much more pleasing to the eye. The redundant ink colorant tessellation as applied here in Figure 5 has been arranged to minimize the range of luminance variation in the regions. This is achieved by creating region boundaries that are predominately orthogonal to the axis of luminance."

For the purpose of satisfying the enablement requirement, it is sufficient that the patent disclose at least one means of performing the invention that would enable a person of ordinary skill in the art to make and use the claimed invention. Spectra-Physics, Inc. v. Coherent, Inc., 827 F.2d 1524, 3 U.S.P.Q. 2d 1737 (Fed. Cir. 1987). With a §112, first paragraph rejection, the Examiner must discharge his initial burden of establishing that one having ordinary skill in the art would have not been able to practice the claimed invention armed with the supporting specification. In re Strahilevitz, 668 F.2d 1229, 212 U.S.P.Q. 561 (C.C.P.A. 1982); In re Armbruster, 512 F.2d 676, 185 U.S.P.Q. 152 (C.C.P.A. 1975); In re Bowen, 492 F.2d 859, 181 U.S.P.Q. 48 (C.C.P.A. 1974); In re Marzocchi, 439 F.2d 220, 169 U.S.P.Q. 367 (C.C.P.A. 1971). This has not been done.

Further, the law is clear that the legal teaching of a specification is its teaching to a skilled and prior-art-knowledgeable artisan, not a layman or examiner, and the specification is not merely read literally (per se) or in a vacuum. As stated by the Federal Circuit in Case v. CPC International, Inc., 730 F.2d 745, 221 U.S.P.Q. 196 at 201 (Fed. Cir. 1984), "35 USC §112 does not require a specific teaching of that which is already known to one of ordinary skill". As emphasized by the CCPA in 1981 in In re Lang, 644 F.2d 856, 209 U.S.P.Q. 288 at 294, the specification disclosure "must be read in light of the

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knowledge possessed by those skilled in the art, and that knowledge can be established . . . by reference to patents and publications available to the public prior to appellant's filing date [or by factual affidavits by experts]. A very important and often unappreciated legal doctrine is that a specification includes, as a matter of law, both any actually cited references, and also any well known art even if not cited or incorporated. The CCPA clearly restated in 1981 in In re Howarth, 654 F.2d 103, 210 U.S.P.Q. 689 at 691-2, the principle that well known art is legally a part of the specification and drawings, and does not need to be cited or described within the *per se* specification to provide legal support. "What is conventional knowledge will be read into the disclosure." 210 U.S.P.Q. 689 at 691-2. In re Howarth was recently cited with approval by the Federal Circuit in DeGeorge v. Bernier, *supra*. The principle was directly applied in Lindemann Maschinenfabrik GMBH, *supra*. As pointed out in the treatise "Patents" by Chisum at 7.03(2): "In Webster Loom Co. v. Higgins, the Supreme Court stated that 'That which is common and well known is as if it were written out in the patent and delineated in the drawings,' and a number of lower court decisions refer to what is 'well known.' . . . The person skilled in the art under §112 should be deemed to know 'all prior art which is generally and reasonably available to the public.' The Court of Customs and Patent Appeals adopted such a standard in In re Howarth [*supra*]. Even before In re Howarth, *supra*, in In re Chilowsky, 43 CCPA 775, 780, 229 F.2d 457, 460, 108 U.S.P.Q. 321, 324 (1956), the CCPA had stated at 324 as to the 35 U.S.C. §112 disclosure issue: "It is well settled that the disclosure of an application embraces not only what is expressly set forth in words or drawings, but what would be understood by persons skilled in the art. As was said in Webster Loom Co. v. Higgins et al., 105 U. S. 580, 586, the applicant 'may begin at the point where his invention begins, and describe what he has made that is new and what it replaces of the old. That which is common and well known is as if it were written out in the patent and delineated in the drawings' . . . to permit

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them to form an unwritten part of the disclosure of the application. Controlling Federal Circuit pronouncements on several aspects of 35 U.S.C. §112 were restated in the Court's decision thereon by Judge Rich in 1986 in Hybritech Inc. v. Monoclonal Antibodies, Inc., 231 U.S.P.Q. 81, 93-94:

> The only manner in which it may be substantiated that the claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or which it is most nearly connected, to make and/or use the invention, is by completely ignoring and leaving as unread the Applicant's actual specification or to read it without regards to the knowledge of those skilled in the art, or both.

The office action further rejects claims 1 and 8 under 35 U.S.C. §112, first paragraph, as to the undue breadth of the language of claims 1 and 8. Further direction is provided to MPEP §2164.08(a) Single Means Claim. MPEP §2164.08(a) Single Means Claim provides:

> A single means claim, i.e., where a means recitation does not appear in combination with another recited element of means, is subject to an undue breadth rejection under 35 U.S.C. 112, first paragraph. In re Hyatt, 708 F.2d 712, 714-715, 218 USPQ 195, 197 (Fed. Cir. 1983) (A single means claim which covered every conceivable means for achieving the stated purpose was held nonenabling for the scope of the claim because the specification disclosed at most only those means known to the inventor.). When claims depend on a recited property, a fact situation comparable to Hyatt is possible, where the claim covers every conceivable structure (means) for achieving the stated property (result) while the specification discloses at most only those known to the inventor.

Hyatt and MPEP §2164.08(a) are directed to a "means for" claim provided with but a single means. The Applicant's claims 1 and 8 are not "means for" claims. They are method claims.

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That might well be the end of it, however in the interests of expediting the prosecution of this matter it will be presumed that the Examiner in arguendo asserts that the MPEP citation applies to "step-for" claims as well, and thereby to the Applicant's claims 1 and 8. However, the Applicant's claims 1 and 8 are NOT "step-for" claims. Please note:

> Where the claim drafter has not signaled his intent to invoke §112, paragraph 6 by using the "step[s] for" language, we are unwilling to resort to that provision to constrain the scope of coverage of a claim limitation without a showing that the limitation contains nothing that can be construed as an act. Method claims are commonly drafted, as in this case, by reciting the phrase "steps of" followed by a list of actions comprising the method claimed. An application of §112, paragraph 6 in the present circumstances would render the scope of coverage of these method claims uncertain and disrupt patentees' settled expectations regarding the scope of their claims. . . . . We thus hold that where a method claim does not contain the term "step[s] for," a limitation of that claim cannot be construed as a step-plus-function limitation without a showing that the limitation contains no act. Masco Corp. v. United States, 303 F.3d 1316, 64 USPQ2d 1182, 1189 (Fed. Cir. 2002).

The Applicant's claims 1 and 8 do not provide the "steps of" language and therefore are NOT "step-for" claims without some further showing. They are considered by the Applicant to be method claims and thus the application of Hyatt and MPEP §2164.08(a) Single Means Claim, does not apply. It is hereby respectfully requested that the rejection of Applicant's claims 1 and 8 under 35 U.S.C. §112, first paragraph, be withdrawn.

Claims 1-3 and 5-16 are rejected under 35 U.S.C. §103(a) as being unpatentable over Kasson in view of Gondek. Kasson teaches the conversion of

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an input color to an output color using a multi-variable function having an input domain in a first three-dimensional color space and output range in a second m-dimensional color space. The conversion from input to output color subdivides the input domain into polyhedra defined by planar grids of points connected to form a plurality of triangles. The planar grids are projected into the remaining dimension of the function domain. When an input color value is presented, the multi-variable function is used to approximate the input value by computing an approximation of the multi-variable function, which provides a value in the output range. A tetrahedron containing the input color value is extracted from the function domain. The values of the multi-variable function at the tetrahedron vertices are obtained by interpolation. The tetrahedron is subdivided into subtetrahedra. The volumes of the subtetrahedra are calculated and multiplied by the function values. The products are added together and normalized to the volume of the extracted tetrahedron to produce an approximation of the input color. The approximation is provided as the value of the output color.

In the office action, Kasson is provided as disclosing tessellating the available color space into regions, and since the regions are in "compact" packing form they are therefore (it is not stated how in the office action nor by Kasson) arranged so as to minimize the range of luminance. This is an incorrect reading of Kasson. Further, Kasson makes no reference to the issue of luminance, nary a mention, and indeed a word search of the patent shows no usage of the word luminance. Nor does a reading of the patent provide any regard for any analogous terminology or teaching directed to the issue of luminance. The "close-packing" as used in Kasson refers to further sub-division of a rectangle into tetrahedra in an "efficient" manner. An efficient manner, it must be noted, without regards to considerations of luminance and indeed in opposition to the Applicant's claimed teaching that color space tetrahedra be arranged so as to best minimize the luminance variation within the defined tetrahedra.   Indeed Figure 2 of Kasson shows tetrahedra which provide

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considerable range of luminance in direct violence to the teachings of the Applicant. Kasson fails to teach anything other than tessellating color space for which the Applicant has already provided prior art notice of with reference to Sakamoto as provided on page 6 of the specification. The Applicant wishes to remind: that one must avoid reading the Applicant's statements into the prior art - see if the prior art, without the benefit of the Applicant's disclosures, would make the invention as a whole obvious. In re Sponnoble, 160 U.S.P.Q. 237 (CCPA 1969).

The Applicant and the Examiner are in agreement that Kasson also fails to disclose a color space defined by redundant color inks.

Gondek fails to provide for what Kasson fatally lacks. Gondek teaches an ink-jet printing system and method which convert monitor-based RGB images to an image represented in CMYLcLmK, in which Lc is a low-dye-load cyan and Lm is a low-dye-load magenta. The method provides a color cube matrix in RGB color space, with a finite set of control points within this color cube. Each control point has a corresponding set of parameters in the CMYLcLmK color space. The control points provide transition points between use of high-dye-load inks and low-dye-load inks to enhance the color image, especially in areas where high-dye-load inks would cause graininess. Based on this set of control point an interpolation is made to arrive at CMYLcLmK parameters of any point in the cube.

Nowhere in Gondek is there disclosed the tessellation of color space into regions so as to minimize the range of luminance variation therein. Thus Gondek fails to provide for what Kasson fatally lacks and therefore a prima facie case of obviousness has not been made out. The Examiner appears to be using Applicant's disclosure as a recipe for selecting the appropriate portions of the prior art to construct Applicant's. A piecemeal reconstruction of the prior art patents in light of Applicant's disclosure is not a basis for a holding of obviousness. In re Kamm et al., 172 U.S.P.Q. 298 (C.C.P.A. 1972). The mere

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fact that the prior art devices could have been modified does not make the modification obvious unless the prior art suggested the desirability of such a modification. In re Gordon, 221 U.S.P.Q. 1125, (Fed. Cir. 1984); Jones v. Hardy, 220 U.S.P.Q. 1021, (Fed. Cir. 1984). It is clear that the combination of patents does not suggest that the modifications proposed by the Examiner be made.

It is therefore respectfully requested that the rejection of claims 1-3 and 5-16 as rejected under 35 U.S.C. §103(a) be withdrawn. Allowance of claims 1-3 and 5-16 is respectfully requested.

Claim 4 is rejected under 35 U.S.C. §103(a) as being unpatentable over Kasson in view of Gondek and Spaulding. Since claim 4 depends from claims deemed allowable it should be allowable as well. Allowance of claim 4 is respectfully requested.

No additional fee is believed to be required for this amendment; however, the undersigned Xerox Corporation attorney authorizes the charging of any necessary fees, other than the issue fee, to Xerox Corporation Deposit Account No. 24-0025.

In the event the Examiner considers personal contact advantageous to the disposition of this case, he is hereby requested to call the undersigned attorney at (585) 423-6918, Rochester, NY.

Respectfully submitted,

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March 1, 2005
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